



NONPOINT SOURCE TIMES

Volume 10, Issue 3

Summer 2001

Sabbathday Lake BMP Demonstration Project

(Editors Note: This is an excellent example of how a NPS Watershed Survey and a Demonstration Project can be used to effectively "energize" local watershed stewardship action to help protect a "threatened" lake.)

Sponsor: Cumberland County Soil and Water Conservation District

Overview: The SWCD, lake association, and the towns joined together to demonstrate the value of BMPs to control soil erosion and reduce sediment and phosphorus loading to the lake. The project installed 8 BMP demonstration sites, provided technical assistance to landowners and used workshops, a watershed tour, press releases, signage, and an attractive 16 page brochure to reach out to watershed residents. This BMP demonstration project started in 1998 and concludes in 2001. Project was funded with a NPS grant (\$61,579) and matching services (\$41,260).

Sabbathday Lake is a 331 acre lake in Cumberland County, Maine. Its watershed covers 5.33 square miles and is within the towns of New Gloucester and Poland. The lake's shoreline is heavily developed



(Continued on page 2)



Habits of Highly Effective Watershed Organizations

(Editors Note: The following is an excerpt from the Minnesota Weekly Update on a recent research presentation on "Habits of Highly Effective Watershed Organizations" that appeared in Minnesota River Weekly Update: May 7, 2001. Issues of the Minnesota River Weekly Update are available on the Internet at <http://www.pca.state.mn.us/water/basins/mnriver/>)

Instead of examining habits of highly effective people as Stephen Covey did in his best selling book, Kathy Draeger investigated factors of highly effective watershed organizations. This research was

(Continued on page 6)

Inside This Issue

Urban Streams Suffering in the Face of Development	3
Watershed Assistance Grants	3
Small Streams Contribute More Than Previously Thought	4
Selected Findings & Current Perspectives on Urban & Rural Water Quality	5
Update on ASCE/EPA National Stormwater BMP Database	6
Northeast Watershed Round Table	9
Boatyard & Marina Stakeholder Group Formed	10
Calendar & Resource Materials Available	11

(Continued from page 1)

with over 100 seasonal and year-round homes. A growing



number of the seasonal homes are being converted to year round usage.

Sabbathday Lake experiences nonpoint source (NPS) pollution problems similar to many other lakes in Maine that have heavily developed shoreland zones and developing watersheds. The DEP has placed Sab-

bathday Lake on their list of "Lakes Most at Risk from Development" under the Maine Stormwater Law and the State's "Nonpoint Source Priority Watersheds" list. The watershed is part of the larger Royal River Watershed, which is also on the list of "Nonpoint Source Priority Watersheds", and drains into the Casco Bay watershed basin, a Category #1 in the Maine Unified Watershed Assessment.

Efforts are well underway to help the towns of New Gloucester and Poland address some of the watershed's polluted runoff problems. In 1997, local volunteers partnered with the Cumberland County Soil and Water Conservation District (SWCD) to complete a nonpoint source pollution survey of the Sabbathday Lake Watershed. The survey identified at least 75 NPS pollution sites, the majority of which were associated with state and town roads, private camp roads and driveways.

In 1998 the Cumberland County SWCD received a 319 grant to install eight Best Management Practice (BMP) demonstration sites around the lake, provide technical assistance to at least 10 residents, and help build upon the already-present local commitment to lake stewardship activities. The strategy was effective; 6 demonstrations were planned, but 8 demonstration projects were implemented; 27 residents requested technical assistance in-

stead of an anticipated 10, and the amount of anticipated financial and in-kind match was greatly exceeded. Also, the Town of New Gloucester provided the entire cost of materials and labor for two demonstration projects and financial match for a third project. The Town of New Gloucester Planning Board incorporated erosion and sediment control technical assistance as a requirement of building permits within the Shoreland Zone. The Town of Poland's Public Works Department provided matching support for ditch work within the watershed also.

The existing 319 grant efforts have prompted landowners and towns within the watershed to install BMPs on their own. In fact, a survey done in winter 2001 of technical assistance recipients showed that more than \$6,000 and 88 person-hours of labor was spent on BMP installation without cost-share assistance through the grant. Also, the Town of New Gloucester Public Works Department spent time and money addressing ditch and shoulder erosion along Snow Hill Road following their involvement in various demonstration projects.

Because momentum is generated and a strong basis is built for additional watershed protection work, and because at least 15 additional sites are in need of attention, the time is right for a grant that provides funds specifically designated to project implementation. The Watershed Improvement Financial Assistance Partnership (WIFAP) made available by the EPA, DEP and the State of Maine Department of Agriculture, Food & Rural Resources was the perfect source of funding for this project. The Sabbathday Lake Water Quality Improvement Project, as proposed through the WIFAP program, will use the existing momentum of the community to control erosion and runoff sources at many of the remaining NPS problem sites. Strategies used will include additional technical assistance, community workshops, funds and labor to install BMPs throughout the watershed. This focused action will reduce loading of polluted runoff into Sabbathday Lake and continue to build local commitment for long-term watershed protection.

For more information on the Sabbathday Lake Water Quality Improvement Project, please contact Jeff Brinck at the Cumberland County SWCD at 839-7839.



Urban Streams Suffering In the Face of Development

A University of Maine master's degree student has found that increasing development is taking a toll on the health of small urban streams in Maine. In the past three years, Chandler Morse, who will receive his degree in the Ecology and Environmental Sciences Program in May, has studied 20 streams in the Bangor, Augusta, Portland and Anson areas. He has found that the condition of Maine's streams declines markedly when more than 6 percent of a watershed is covered by impervious surfaces, such as roads, driveways and parking lots. Runoff from these and other surfaces can have a dramatic effect on the insects and other organisms that live in streams, Morse says.

"At 6 percent impervious coverage, we start to see a transition from a rural area with a few houses here and there to an urban area with sewers, culverts and other facilities that drain water away," he explains. "Rain storms and snow melt can have a visible effect on streams, including carrying sediment that muddies the waters and destroys habitat, but I was looking for long-term and cumulative effects that most of us normally wouldn't see."

For his thesis, Morse worked with Alex Huryn and Chris Cronan, faculty members in the Department of Biological Sciences. The first step of the project was to identify 20 similar streams with varying levels of urban development within the watersheds. They settled on nine in the Bangor area, four near Portland, three near Augusta and four near Anson.

"A rule of thumb around the country is that water quality takes a nose dive when watershed development reaches 10 percent," says Morse. "But we saw this happen at 6 percent."

Morse documented the physical condition of each stream channel and habitat. Waiting at least two days after rainstorms, he collected samples of stream water and aquatic insects. Altogether, he identified almost 90,000 insects.

He quantified the level of urban development by using Natural Resource Conservation Service aerial photos and a geographic information system to map the watersheds. He also determined the proportions of the watersheds that are in forested, wetland, and agricultural land uses.

The results suggest that where development was below the 6 percent threshold, the numbers and types of insects and water chemistry were relatively unchanged. However, as the extent of development increased, streams changed in a variety of ways.

- Insects shifted to those that are more tolerant of pollution.
- Riparian zones, areas that are immediately adjacent to streams, shrank and began to lose their ability to filter sediment and nutrients from runoff.
- Dissolved oxygen levels, critical for fish and many insects, tended to be lower in more urbanized streams.
- Stream banks in more urbanized streams tended to be more badly eroded, possibly the result of higher storm water flows.

The percentage of a watershed under impervious cover has not been used in Maine as a factor in environmental management, Morse adds. However, by associating stream quality with a measure of development, this project has laid the groundwork for such an approach.

"A rule of thumb around the country is that water quality takes a nose dive when watershed development reaches 10 percent," says Morse. "But we saw this happen at 6 percent. We don't know why or what it might be about our watersheds that makes them more sensitive. That's for other researchers to work on."

Watershed Assistance Grants

In April, 2001, the U.S. Environmental Protection Agency's Office of Wetlands, Oceans, and Watersheds selected River Network to coordinate and administer the Watershed Assistance Grants Program (WAG). The purpose of the WAG Program is to provide small grants to local watershed partnerships to support their organizational development and long-term effectiveness. While there will likely be a few changes from the application process used in 2000 and the application process that will be put in place for 2001, River Network and EPA expect that the forthcoming 2001 application process will be similar to the one in 2000.

Information on the 2001 application process, including eligibility and selection criteria will be made available around the first week of May on River Networks Website at:

<http://www.rivernetwork.org>

Be sure to use the Aself-screening process which will be available then to assure that you are eligible to receive a grant and that the activities you propose meet the criteria.

Grant deadline is July 20, 2001.



Small Streams Contribute More Than Previously Thought

(Editors note: This article comes to us from the ELI wetlands list server.)

Small Streams Contribute Far More Than
Previously Thought To Cleaning Waterways
National Science Foundation - 4/9/01

Small streams remove more nutrients such as nitrogen from water than do their larger counterparts, according to researchers who have applied sampling methods developed in a National Science Foundation (NSF) Arctic area ecological study to waterways across the nation.

The finding could have important implications for land-use policies in watersheds from the Chesapeake Bay on the East Coast to Puget Sound in the West.

The findings, to be published in the April 6 edition of Science, are based on data collected initially from streams in NSF's Arctic Tundra Long-Term Ecological Research (LTER) site in Alaska.

Excess nitrogen can cause ecologically damaging effects in large waterways, include algal blooms, because the nutrients are transported downstream and collect there.

"There's a very strong relationship between the size of a stream and how rapidly that stream removes nutrients," said Bruce Peterson of the Ecosystems Center at the Marine Biological Laboratory in Woods Hole, Mass. "The smaller the stream, the more quickly nitrogen can be removed and the less distance it will be transported down the stream."

Peterson is one of more than a dozen researchers who contributed to the Science paper.

He noted that the findings are unique because they were produced by research teams working in a coordinated and identical fashion nationwide under the same research protocol.

"In terms of ecosystems studies it's very rare to get people from this many sites to agree to do this kind of controlled experiment," Peterson said. "Many people study nitrogen cycling, but they all tend to do their own experiments. Collaboration is the key to developing a general understanding

of ecosystems."

Peterson notes that, collectively, the new studies provide a radically different picture of the role of small streams in contributing to existing nutrient loading. "Traditionally streams have been thought of as transport system moving substances from catchments to downstream points," he said. "It's been difficult to understand how dynamic the stream system itself is."

By placing tracers in smaller streams, the researchers discovered how quickly nutrients were assimilated and processed by organisms that live on the streambeds.

Peterson argues that the finding could have important implications for land use policies. In many agricultural areas, for example, small streams are often covered to allow ease of access for tilling and working fields. The covering, in effect, creates a dark pipe that inhibits the stream's ability to scrub excess nutrients.

While excess nitrogen has many sources, including runoff from residential lawns and byproducts of automobile combustion, taking greater care to insure that small streams can work effectively to clean the water will reduce the overall nitrogen load that makes its way into larger bodies of water.

"It doesn't mean that you can ignore your sewage treatment plants, but if we can do better with our small streams and do some restoration activities, it's going to have some benefits," he said. "What it means is that you have to take care of the streams on the landscape."

For more information about the Arctic Tundra LTER, see:

Good Sand/Salt News From Maine DOT

Despite the challenging winter this year, Maine DOT used significantly less sand than in past due to the "salt priority" initiative. Under this policy, department crews prioritized applications of salt to the road when conditions are favorable. Preliminary data suggest that the shift to salt priority will result in significant reductions in sand use, while overall salt use may rise slightly. Feedback also indicates that incidence of cracked windshields was down this winter, that road crews favored the change, and that complaints from the public were fewer. The policy does not prohibit the use of sand, nor suggest that salt is appropriate for every road. Salt priority works better with higher volumes of traffic. The new policy holds promise as a coast saver and an environmental improvement, while providing a more drivable road surface.

Selected Findings & Current Perspectives on Urban & Rural Water Quality

(Editors note: This article was written and published by the United States Geological Service - USGS.)

Selected Findings and Current Perspectives on Urban and Rural Water Quality by the National Water-Quality Assessment Program

Studies by the USGS National Water-Quality Assessment (NAWQA) program in the last decade describe water-quality conditions in nearly 120 agricultural and 35 urban watersheds ("urban" primarily refers to residential and commercial development over the last 50 years). The findings show that nonpoint chemical contamination is an agricultural and urban issue. While there is still a lot of work to be pursued with point source contamination and infrastructure improvements in urban areas, such as related to combined and sanitary sewer overflows, significant improvements in water quality will also depend upon management of urban nonpoint sources. The NAWQA findings also show that water-quality conditions and aquatic health reflect a complex combination of land and chemical use, land-management practices, population density and watershed development, and natural features, such as soils, geology, hydrology, and climate. Concentrations of contaminants vary from season to season and from watershed to watershed. Even among seemingly similar land uses and sources of contamination, different areas can have very different degrees of vulnerability and, therefore, have different rates at which improved treatment or management can lead to improvements in water quality.

Water Quality in Agricultural Watersheds

* Nitrogen and phosphorus commonly exceed levels that contribute to excessive algae. For example, average annual concentrations of phosphorus in nearly 80 percent of streams sampled in agricultural areas were greater than the U. S. Environmental Protection Agency (USEPA) desired goal for preventing nuisance plant growth in streams. Excessive plant growth can lead to low dissolved oxygen, which can be harmful to fish and other aquatic life.

* Nitrate is often elevated in shallow ground water underlying farmland. Concentrations in about 20 percent of shallow wells sampled in agricultural areas exceeded the USEPA drinking water standard. This raises considerations in rural areas where shallow ground water is used for domestic supply because domestic wells are not regulated and well owners are often not aware of their well water quality or well vulnerability to contamination. Elevated nitrate occurs most frequently in karst areas or where soils and aquifers consist of sand and gravel. These natural features enable rapid infiltration and downward movement of water and chemicals. Some of the more vulnerable areas are the Central Valley of California, and parts of the Pacific Northwest, the Great Plains, and the Mid-Atlantic region. In contrast, ground water contaminants underlying farmland in parts of the upper Midwest are barely detectable, despite similar high rates of chemical use. This results in part because the ground water is "protected" by relatively impermeable and poorly drained soils and glacial till that cover much of the region, and tile drains provide quick pathways for runoff to streams.

(Continued on page 7)

Auburn Students Making a difference

The Auburn School Department was awarded a Watershed Protection grant this spring to stabilize a boat ramp to the "Basin" a tributary to Lake Auburn. Two eighth grade students have taken the lead in researching and coordinating work to be done on this project, which includes a new road surface, the planting of a buffer near the shore, and an interpretive sign to educate users about shoreline stabilization and invasive plants. As a result of these students' concern, the owner, who initially was not concerned about land conservation and water quality, has come around 180 degrees to grant a conservation easement for her shore-front property to the Auburn Water District. Getting students involved in the community can make a difference.

Navigable Harbors data base now available in GIS.

The spatial data set has been created by Vicki Schmidt and Pam Parker of ME DEP. It is derived from the Maine coastal coverage. The data has been combined with environmental, point source, and other data to help determine priority locations for boat pumpout facilities. A complimentary Pumpout Facilities dataset has also been created by Pam and Vicki. The Pumpout Facility data will be enhanced as new facilities are built.

Update on ASCE/EPA National Stormwater BMP Database

(Editors note: This article was taken from an email by Jane Clary of Wright water.)

As a recipient of the National Stormwater BMP Database CD, Version 1.0, we wanted to give you a brief update on overall project progress as of April 2001. More detail on these items, as well as other periodic project updates, can be found on our web site at <http://www.bmpdatabase.org>. Here are some highlights:

1. The web site's on-line search engine has been streamlined to provide a better overview of the data available for each test site. Additionally, BMP performance studies and detailed statistical analyses conducted by the Project Team are now available for most BMPs in the database through the on-line search engine.

2. The database software and data updates can now be downloaded from the project web site. Microsoft Access 2000 users can download both the data entry and most current search engine modules containing data for 98 BMPs. Additionally, those users currently operating Version 1.0 of the CD (Access 97/Non-Access users) can download updated data tables for their search engine. Go to the Downloads page of the web site to obtain these products.

3. The June 2000 BMP Data Evaluation report can be downloaded in Adobe portable document format (PDF) from <http://www.bmpdatabase.org>.

4. A Monitoring Guidance Manual, consistent with the database protocols, will be completed by the end of June 2001 by the Project Team. For more information, contact Eric Strecker (estrecker@geosyntec.com) or Marcus Quigley (mquigley@geosyntec.com). Forms for use in field monitoring activities are available for downloading from www.bmpdatabase.org.

5. New BMP studies will continue to be posted to the web site periodically. Currently, data for 98 BMPs can be retrieved, with roughly 40 new studies anticipated by the fall of 2001.

6. The Project Team is actively pursuing new data for the database and is available to enter your data for you, provided that the data meet the database reporting protocols. If you have data that you would like to provide or discuss

providing, please contact Jane Clary at (clary@wrightwater.com).

7. The "Frequently Asked Questions" portion of the web site provides information on minor bugs detected in the software, as well as clarifying information of various aspects of the database. We welcome your feedback on both the database and web site. Please direct any suggestions to Jane Clary at (clary@wrightwater.com).

Thank you for your support of the project on behalf of the Project Team, Jonathan Jones, P.E., Wright Water Engineers (jonjones@wrightwater.com) Ben Urbonas, P.E., Urban Drainage and Flood Control District (burbonas@udfcd.org) and Eric Strecker, P.E. GeoSyntec (estrecker@geosyntec.com)



(Continued from page 1)

completed for her Ph D thesis in Water Resources Science at the University of Minnesota. Draeger presented the results of her research to a group of scientists, students, professors, and others interested in the topic on Wednesday, May 2.

To assess what makes these organizations effective, Draeger sent surveys to 600 staff and managers in 79 watershed organizations (all of which were in Minnesota). The response rate was good with 382 responses from 78 organizations.

According to her study, highly effective watershed organizations, defined as those that utilize multiple strategies to improve water quality (strategies included BMPs, riparian/shoreland/wetland restoration, education, capital improvement projects, monitoring, and regulation):

1) have staff (the size of staff did not seem to predict success since over 50 percent of the organizations she studied had fewer than 3 staff members)

2) desire higher levels of public involvement in their project

(Continued on page 8)

(Continued from page 5)

* Pesticides are widespread. At least one pesticide was detected in more than 95 percent of stream samples. Pesticides were detected in more than 60 percent of shallow wells sampled in agricultural areas.

* Pesticides commonly occur in mixtures. Two-thirds of stream samples collected in agricultural areas contained 5 or more pesticides, and more than one-quarter of the samples contained 10 or more. Ground water contained fewer pesticides; about thirty percent of the wells sampled contained two or more.

* Concentrations of pesticides generally are low and less than drinking-water standards. However, the risk to humans and the environment from present-day low levels of contaminant exposure remains unclear. For example, current standards and guidelines do not yet account for exposure to mixtures, and many pesticides and their breakdown products do not have standards or guidelines.

* Herbicides—most commonly atrazine and its breakdown product, desethylatrazine, metolachlor, cyanazine, and alachlor—occur more frequently and usually at higher concentrations in agricultural streams and ground water than in urban waters. Their occurrence is linked to their use; they rank in the top five in national herbicide use for agriculture.

* Historically used insecticides still persist in agricultural streams and sediment. DDT was the most commonly detected organochlorine compound, followed by dieldrin and chlordane. Their uses were restricted in the 1970s and, yet, more than 20 years later, one or more sediment-quality guidelines were exceeded at more than 20 percent of agricultural sites.

Water Quality in Urban Watersheds

* Concentrations of fecal coliform bacteria commonly exceed recommended standards for water-contact recreation.

* Concentrations of total phosphorus are generally as high in urban streams as in agricultural streams. More than 70 percent of sampled urban streams exceeded the USEPA desired goal to prevent nuisance plant growth.

* Insecticides, such as diazinon, carbaryl, chlorpyrifos, and malathion, occur at higher frequencies, and usually at higher concentrations in urban streams than in agricultural streams. Concentrations are low, rarely exceeding USEPA drinking-water standards. However, effects on aquatic life may be more of a concern. Concentrations of insecticides exceeded at least one guideline established to protect aquatic life in every sampled urban stream.

* Herbicides occur prevalently in urban streams (detected in 99 percent of stream samples) and ground water (detected in more than 50 percent of sampled wells). Most common are those applied to lawns, golf courses, and road right-of-ways, such as atrazine, simazine, and prometon.

* Similar to agricultural areas, pesticides in urban waters commonly occur in mixtures; nearly 80 percent of stream samples contained 5 or more pesticides. Two of the most commonly detected insecticides in mixtures were diazinon and chlorpyrifos; common herbicides were simazine and prometon.

* Urban streams have higher frequencies of occurrence of DDT, chlordane, and dieldrin in sediment and higher concentrations of chlordane and dieldrin than agricultural streams. Sediment-quality guidelines for organochlorine pesticides were exceeded at 36 percent of sampled urban sites.

* VOCs, which are used in plastics, cleaning solvents, gasoline, and industrial operations,

(Continued on page 9)

TMDL News

Lakes TMDLs.

The Sebasticook Lake TMDL final report was approved by EPA Region 1 offices on March 8, 2001. Now there are three EPA approved lake TMDLs on DEP's WebPage: Cob-bossee, Madawaska, and Sebasticook.

The East Pond TMDL preliminary report has been prepared and is out for review to select stakeholders. The China Lake TMDL has been drafted.

River TMDLs.

In March EPA approved TMDLs for the Mousam River and the Medux-nekeag River. Materials associated with recent TMDL approvals can be found at: <http://janus.state.me.us/dep/blwq/docmonitoring/tmdl2.htm>



(Continued from page 6)

3) are concerned for water quality (as opposed to being more concerned about carrying out a mandate)

4) are more likely to collaborate with multiple stakeholders, and

5) should NOT be created by mandate.

and more....

Although we may not see a best seller in bookstores any time soon, this work is valuable to Minnesota's watershed organizations as they strive to improve water quality in the state.

Watersheds & Urban Streams Going Main Stream at Museums

(Editors note: The Academy of Natural Sciences has a new permanent exhibit—read on to hear about it!)

Living Downstream

We all live in a watershed. But most people don't realize that their actions—whether they toss a candy wrapper down an urban street sewer or clean up after their dog in a suburban park—affect the quality of water, and the health of plants and animals, in that watershed.

Living Downstream, a new, family-friendly exhibition opening just in time for Earth Day, demonstrates how people's actions impact water quality and what we can do in our everyday lives to help the environment.

Opening Saturday, April 21, *Living Downstream* is a permanent installation created by Academy staff based on the institution's world-renowned scientific research, restoration and conservation efforts involving watersheds. The exhibit combines hands-on and high-tech elements designed to be understood and interpreted by visitors ages 8 and up.

The Academy is a recognized leader in the field of water quality research and restoration and is active in many

projects funded by federal and state governments as well as by foundations and industrial companies.

Learn more about water and watershed research conducted by The Academy of Natural Sciences or explore the Current Issues Affecting our World Water Supply in Know Your Environment.

For more information: <http://www.acnatsci.org/>

Course in Fluvial Geomorphology

UC, White Mountain Research Station and UC, Riverside Extension are pleased to host a short course in Fluvial Geomorphology in River and Stream Restoration: Principles and Applications.

Date: September 30-October 5, 2001.

Led by G. Mathias Kondolf, Ph.D., UC Berkeley

Cost: \$1,200 and includes instruction, field trips, course materials, and meals.

For details, see <http://www.wmrs.edu/Geomorph2001/geomorph.htm>.

The field of river restoration has grown enormously in recent years, with a broad range of projects undertaken throughout the United States and elsewhere in the developed world. In many cases restoration projects have been designed with inadequate understanding of underlying geomorphic processes, and despite their good intentions, many have failed.

This course emphasizes the scientific basis of river restoration, and lessons learned from past restoration efforts, with presentations from leading researchers and practitioners in applied fluvial geomorphology, flume demonstrations, fieldwork, and discussion of issues faced by the shortcourse participants and managers of streams in the region.

With a diversity of professional perspectives, the course emphasizes active exchange of ideas and experience from both academic and practical perspectives in an informal, friendly setting, with excellent facilities set in the incredible beauty of the Eastern Sierra Region.

The maximum number of participants is 34 and the course is booked on a first-come, first served basis and is likely to fill quickly, so please reserve your spot early.

(Continued from page 7)

occur widely in shallow urban ground water. The most frequently detected of the 60 compounds were the commercial and industrial solvents trichloroethene (TCE), tetrachloroethene (PCE), 1,1-trichloroethane (TCA), and methylene chloride; the gasoline additive methyl tert-butyl ether (MTBE); and the solvent and disinfection byproduct of water treatment, trichloromethane (also known as chloroform).

* Concentrations of selected trace elements, such as cadmium, lead, zinc, and mercury, are elevated in populated urban settings, most likely caused by emissions from industrial and municipal activities and the widespread use of motor vehicles. Streambed sediment and reservoir-sediment cores, which can be used to track chemistry over long time periods, indicate that lead increased from 1940s to the 1970s, and began to decrease after it was removed from use in gasoline. Concentrations are not yet down to background levels. Decreases are also noted for DDT and chlordane, which were banned from use in the 1970s and 1980s.

* In contrast, zinc and polycyclic aromatic hydrocarbons (PAHs, which result from fossil fuel combustion) are increasing. The increasing concentrations most likely relate to increasing traffic in watersheds. Sediment-quality guidelines for PAHs were exceeded at more than 40 percent of urban sites.

* Toxic compounds in stream bottom sediment in urban areas, such as DDT, chlordane, dieldrin, and PCBs, were also found in fish tissue, often at higher concentrations than in the sediment. One or more organochlorine pesticide was detected in 97 percent of fish samples collected at urban sites, and PCBs were detected in more than 80 percent of fish samples. Concentrations of organochlorine compounds exceeded guidelines to protect wildlife at more than 10 percent of urban sites; wildlife guidelines for PCBs were exceeded at nearly 70 percent of urban sites. Concentrations were high enough in some urban streams for some states to issue fish-consumption advisories.

* Deteriorated water quality and sediment and habitat disturbances contribute to degraded biological communities in urban streams. The greatest effects occur in areas with the highest human population densities and watershed development. The impacted sites are dominated by algae communities tolerant of siltation and elevated nutrient concentrations; disturbance-tolerant aquatic invertebrates (such as worms and midges); and omnivorous fish communities.

Contacts for additional information or questions:

Tim Miller (703) 648-6868 (tlmiller@usgs.gov)

Pixie Hamilton (804) 261-2602 (pahamilt@usgs.gov)

Visit USGS's website for direct access to their publications, data, and maps: <http://water.usgs.gov/nawqa>

Northeast Watershed Round Table

Mark your calendar and plan to take part in the third Northeast Watershed Round Table conference. We will continue the work of developing strategies to protect, manage and restore our region's watersheds. This July 20-21, 2001 at the Northfield Mount Hermon School in Northfield, MA, join grassroots watershed leaders and representatives of state and federal resource agencies, along with planners and representatives of the business community, to take a comprehensive look at growth management from a watershed perspective.

The central question raised at this summer's conference will be, "Can watersheds be an integrating element to bring people together to develop and implement good land use practices?" Smart growth was a focal point for discussion at the 1998 Round Table and debate about sprawl has continued throughout the Northeast over the past half decade. Within this framework, the Northeast Watershed Round Table (NEWRT) plans to explore and strengthen the connection between growth management and watershed management; build the skills of the watershed community to work with land developers, municipal government, landowners, farmers, and others; expand the network of partners involved in protecting and restoring northeast watersheds; and continue to build on Round Tables I & II by refining the Northeast Watershed Strategy developed at the previous two conferences.

Round Table III participants will develop watershed strategies that will combat sprawl by examining case studies, working in small discussion groups, and learning about effective new tools. Participants will form break out groups to discuss local case studies which will illuminate the complex issues involved in smart growth. The case study groups will be lead by individuals with first hand experience dealing with watersheds and smart growth issues including: transportation, infrastructure, local zoning, urban redevelopment and community revitalization, the economic impact of sprawl and smart growth, farmland and open space preservation, and federal, state, and local land use policies. The small discussion groups, organized by state or watershed, will focus on developing a strategy to integrate watersheds into Smart Growth initiatives in that state or watershed. The final aspect of the Round Table III will be a working lunch where attendees will explore new approaches for promoting smart growth and watershed protection. And of course, there will be time for relaxation, networking, and fun in the beautiful rustic setting of the Northfield Mount Hermon School.

Please join us for this exciting two day event! For more information, call Peter Raabe at (202) 364-2550 or email praabe@rivernetwork.org.

Cushing Shellfish Area Reopening

Approximately one hundred acres of valuable shellfish habitat were recently opened to harvesting in Cushing after a three year long effort by John Glowa and Phil Garwood of the DEP and Fran Pierce of the DMR to identify and remove pollution sources in the St. George River. Of the 3800 acres of surface area at high tide in the St. George River estuary, over one quarter - 1000 acres, are exposed mudflats at low tide. Before the large-scale shellfishing area closures in the 1980s due to pollution, the estuary supported a large shellfishing industry.

In the mid 1990s, because of the value of the shellfish resources in the estuary, local conservation and shellfish concerns, along with the Department of Marine Resources, worked hard to improve water quality. The removal of the Town of Thomaston's sewage discharge, and extensive repairs to its leaky sewers, and sanitary surveys of much of the shoreline were the major focal points. These efforts paid off in 1996 when 1800 acres within the upper estuary were reopened for shellfish harvest.

Even with the substantial improvements in water quality reflected in the 1996 opening, many of the coves on the Cushing side of the estuary remained closed due to pollution. In 1998, working closely with the DMR, DEP water enforcement began an intensive sanitary survey beginning with Hyler Cove. Topographic maps were used to identify the watersheds and properties with any opportunity to drain directly or indirectly into the closed shellfish areas. Through the autumn of 2000, nearly 400 properties were inspected with 45 illegal discharges documented. The illegal discharges ranged from sink and washing machine drains into streams or ditches to straight pipes with no treatment.

Most of the 45 problems have been corrected thanks to the cooperation of the people of the Town of Cushing. Many property owners promptly repaired or replaced their systems to eliminate the discharges. Others have been helped by the DEP's Small Community Grant Program (SCGP). SCGP staff at DEP, and its contractor, Midcoast Regional Planning Commission, have worked collaboratively with town officials to provide grant assistance for the replacement of 6 septic systems, with 4 more on the list for 2001.

During and after the removal of pollution sources, DMR staff take water samples to determine whether areas are safe for shellfish harvest. Because of the number of samples required to document that an area has been successfully cleaned up, it may take months after the removal of the last pollution source before the area can be opened. The first positive results of the Cushing project were realized on January 3, 2001, when Hyler Cove was opened to harvest for the first time in many years, adding some 100

acres of high value habitat for local clammers to harvest.

Pollution sources have been removed from several of the other coves, and the remaining sources have been targeted for removal in 2001. After clean water sample numbers build up, a number of other coves may be opened to harvest later this year.

Boatyard & Marina Stakeholder Group Formed

The Maine Department of Environmental Protection is organizing a stakeholder group to develop water quality protection standards for the operation of boatyards and marinas. This effort was launched with an initial meeting in late January. Monthly meetings thereafter are expected with completion of the group's work anticipated sometime between July and the end of December, 2001.

So what was the impetus for this project? A combination of two needs will be addressed, including both point source and nonpoint source (NPS) pollution. Some activities at boatyards and marinas meet the definition of a point source discharge and require a permit under the NPDES Program, including commercial boat washing (boat owners cleaning their own boats are not subject to this requirement). To date, however, the DEP has not established permitting standards for those activities. Most other operations that have potential to impact water quality are considered to be NPS pollution. Maine is required to develop enforceable standards to address these activities to comply with the Coastal Nonpoint Program (6217) administered by NOAA and EPA. Compliance with the 6217 Program is needed to ensure continued Coastal Program funding.

On a nationwide scale, water quality impacts from boatyards and marinas are considered minor compared with other sources, such as agriculture and urban development. Locally, however, impacts can and have been significant. Pollutants that might be generated from a marina or boatyard include:

- nutrients and pathogens overboard discharge and pet waste;
- sediments from parking and storage area runoff and shoreline erosion;
- petroleum product spillage; toxic metals from antifoulants and other boat maintenance debris;
- other liquid and solid wastes from engine and hull maintenance.

The boatyard and marina stakeholder group was formed with the goal of developing standards that will effectively address water quality concerns in a way that is feasible for the operators of these facilities. Department staff anticipate that a general permit program will be developed which will incorporate these standards.

For more information about this project, contact Pam Parker at 287-3901.

Calendar of Events

June. Hazard Trees in the Shoreland Zone training for CEOs. (four dates and locations around the state.) FMI contact the State Planning Office, (207) 287-8050.

June 16, 2001. Stream Team Day at Maine Audubon Society's Gillsland Farm, Falmouth—It's Free! FMI - <http://janus.state.me.us/dep/blwq/docstream/streamnews.htm> .

June 16, 2001. COLA Annual Meeting. China Lake Conference Center. FMI 1-877-254-2511 or info@mainecola.org.

June 23, 2001. VLMP 30th Annual Meeting. Maine Conservation School, Bryant Pond.

September. Subsurface Wastewater Disposal at Highmoor Farm (Repeat of last year). FMI contact the State Planning Office, (207) 287-8050.

Sep 13-16, 2001. Maine Environmental Educators Association Conference.

May 2002. NEWIPICC NPS 13th Annual Conference—host state Maine.

Web Sites of Interest

Looking for information on DEP's present Rule Making projects? Check out this site for the latest: <http://janus.state.me.us/dep/blwq/rule.htm>

Resources Available

Surface Water Ambient Toxic Monitoring Program (SWAT). The 1999 SWAT report was recently completed. Copy (in several parts) can be found at: <http://janus.state.me.us/dep/blwq/monitoring.htm#swat>

This newsletter is prepared especially of those involved in non-point source pollution issues. It is funded through an EPA 319 Clean Water Act Grant. If you have any announcements, comments or items for the Nonpoint Source Times, or if you would like to be added to the mailing list, please call or write:

Kathy Hoppe
Maine DEP
1235 Central Drive
Presque Isle, ME
04769
phone: 207/764-0477
fax: 207/764-1507
kathy.m.hoppe@state.me.us

Clean water starts with you!



Maine DEP
1235 Central Drive
Presque Isle, ME 04769